

REMARKS

Initially, Applicants would like to express appreciation to the Examiner for the detailed Final Official Action provided, for the acknowledgment of Applicants' Claim for Priority and receipt of the certified copy of the priority document, and for the acknowledgment of Applicants' Information Disclosure Statements by return of the Forms PTO-1449.

Claims 1-3 are currently pending. Applicants respectfully request reconsideration of the outstanding rejection and allowance of claims 1-3 in the present application. Such action is respectfully requested and is now believed to be appropriate and proper.

The Examiner has rejected claims 1-3 under 35 U.S.C. § 102(b) as being anticipated by JACKSON (U.S. Patent No. 6,110,172). The Examiner takes the position that the JACKSON patent discloses a bone screw assembly including a pressure fixing device 3, 4, a rod 15, a head portion 7, and protruding portions 17 provided on both sides of the groove. Further, the Examiner states that the protruding portions 17 extend in a direction perpendicular to the longitudinal axis of the spinal rod.

However, Applicants respectfully submit that JACKSON fails to show each and every element recited in the claims. In particular, claim 1 sets forth a rod fixing apparatus for fixing a rod including, inter alia, a pressure fixing device and "protruding portions configured to eat into the rod portion in both end sides of the circular arc rod engagement portion outside the pressure fixing device, the protruding portions extending in a direction substantially perpendicular to a

longitudinal direction of the vertebra connecting member”. Claim 3 sets forth a rod fixing apparatus for fixing a rod including, inter alia, a screw portion, a head portion provided with an engagement portion, and “small projections configured to eat into the rod, the small projections being provided on both sides of the groove portion, the small projections extending in a direction substantially perpendicular to a longitudinal direction of the rod”.

See particularly figures 2A, 2B, and 4A; and pages 5-7 of Applicants' specification. In the first embodiment of Applicants' claimed invention, the rod portion 7R of the vertebra connection member 7 extends in a longitudinal direction along its axis. The rod fixing apparatus also includes two protruding portions or small projections 15 (two protruding portions 29 in the second embodiment of Applicants' claimed invention). A first protruding portion 15, 29 is positioned at a first end of the rod engagement portion 9 (the rod engagement portion 23 in the second embodiment of Applicants' claimed invention), and a second protruding portion 15, 29 is positioned at a second end of the rod engagement portion 9, 23. Thus, the protruding portions 15, 29 are positioned at the ends of the rod engagement portion 9, 23. The protruding portions 15, 29 are not positioned between the ends of the rod engagement portion 9, 23; and the center portion of the rod engagement portion 9, 23 does not include protruding portions. Accordingly, since the protruding portions 15, 29 are positioned at the ends of the rod engagement portion 9, 23, the protruding portions 15, 29 “eat into the rod portion in both end sides of the circular arc rod engagement portion”, as recited in claim 1. The small projections 15, 29 are “configured to eat into the rod,

the small projections being provided on both sides of the groove portion”, as recited in claim 3. Further, since the protruding portions 15, 29 are positioned at the ends of the rod engagement portion 9, 23, the protruding portions 15, 29 eat into the rod portion “outside the pressure fixing device”, as recited in claim 1.

Further, as clearly shown in figures 2A, 2B, and 4A, each protruding portion 15, 29 extends circumferentially along the rod portion 7A of the vertebra connection member 7. Clearly, the circumferential direction is substantially perpendicular to the longitudinal extension direction of the rod portion 7A of the vertebra connection 7. Each protruding portion 15, 29 extends circumferentially along the outer surface of the rod portion 7A. Thus, each protruding portion 15, 29 extends “in a direction substantially perpendicular to a longitudinal direction of the vertebra connecting member”, as recited in claim 1. Each small projection 15, 29 extends “in a direction substantially perpendicular to a longitudinal direction of the rod”, as recited in claim 3.

As shown and described in the present application, the configuration of the rod fixing apparatus provides that the protruding portions or small projections positioned on both ends only of the engagement portion or groove portion bite into the rod and firmly fix the rod. Accordingly, the configuration of the protruding portions or small projections 15, 29 extending in a direction substantially perpendicular to the longitudinal axis of the rod portion 7A, prevents the rod portion 7A from being displaced in the longitudinal direction and prevents the rod portion 7A from being displaced rotationally around the longitudinal axis of the rod portion 7A. Additionally, the present invention improves over the prior art by

providing that the rod portion 7A may be formed in a simple round shape. The enlarged convex portion 113 of the prior art may be eliminated.

The JACKSON patent discloses an assembly including a bone screw 2 having a U-shaped channel 10. A plurality of ridges 17 are positioned on the lower curved edge of the channel.

The Examiner has taken the position that projections 17 are "provided on both sides of the groove (left and right or front to back)". Further, the Examiner has taken the position that the claim language may fairly be read as including the ridges 17 of JACKSON since the ridges "extend in two different directions, one of which is still perpendicular to the longitudinal axis of the spinal rod".

However, the plurality of ridges 17 of JACKSON are positioned so as to cover the entire lower curved edge of the U-shaped channel 10. The ridges 17 of JACKSON are not positioned on the ends of the U-shaped channel 10 as in Applicants' claimed invention. Accordingly, JACKSON fails to disclose protruding portions that "eat into the rod portion in both end sides of the circular arc rod engagement portion outside the pressure fixing device", as recited in claim 1. Further, JACKSON fails to disclose small projections that are "configured to eat into the rod, the small projections being provided on both sides of the groove portion", as recited in claim 3.

Further, as clearly shown in figures 1 and 2 of the JACKSON patent, each ridge 17 extends in a direction parallel to the longitudinal direction of the spinal rod 15. The Examiner has stated that the ridges extend in two directions (left and right or front to back)" and that the ridges "extend in two different directions,

one of which is still perpendicular to the longitudinal axis of the spinal rod". However, Applicants respectfully submit that the ridges do not extend in two directions. In this regard, Applicants point out that the ridges 17 are arranged side by side in a row, which row extends along the lower curved edge of the channel. Accordingly, the row may be described as extending in a direction substantially perpendicular to the longitudinal direction of the rod 15. Accordingly, the ridges 17 cannot fairly be described as extending in a direction substantially perpendicular to the longitudinal direction of the rod. Moreover, the text of the JACKSON patent confirms this since column 4, lines 21-23 of JACKSON describes that the ridges 17 "extend from a first or front face 18 to a second or rear face 19 of the bone screw head 7". Therefore, JACKSON fails to disclose "protruding portions extending in a direction substantially perpendicular to a longitudinal direction of the vertebra connecting member", as recited in claim 1. Further, JACKSON also fails to disclose "small projections extending in a direction substantially perpendicular to a longitudinal direction of the rod", as recited in claim 1.

Accordingly, the JACKSON patent does not disclose a rod fixing device for fixing a rod including, inter alia, "protruding portions configured to eat into the rod portion in both end sides of the circular arc rod engagement portion outside the pressure fixing device, the protruding portions extending in a direction substantially perpendicular to a longitudinal direction of the vertebra connecting member", as in claim 1. Further, the JACKSON patent does not disclose a rod fixing device for fixing a rod including, inter alia, "small projections configured to

eat into the rod, the small projections being provided on both sides of the groove portion, the small projections extending in a direction substantially perpendicular to a longitudinal direction of the rod", as set forth claim 3. Since the reference fails to show each and every element of the claimed device, the rejection of claims 1 and 3 under 35 U.S.C. § 102(b) over JACKSON is improper and withdrawal thereof is respectfully requested.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection, and an early indication of the allowance of claims 1-3.

SUMMARY AND CONCLUSION

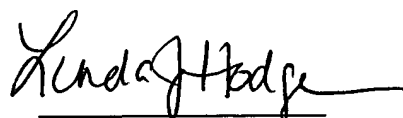
In view of the foregoing, it is submitted that the present response is proper and that none of the references of record, considered alone or in any proper combination thereof, anticipate or render obvious Applicants' invention as recited in claims 1-3. The applied references of record have been discussed and distinguished, while significant claimed features of the present invention have been pointed out.

Accordingly, consideration of the present response, reconsideration of the outstanding Final Official Action, and allowance of the present application therein are respectfully requested and now believed to be appropriate.

Applicants have made a sincere effort to place the present application in condition for allowance and believe that they have now done so.

Should there be any questions, the Examiner is invited to contact the undersigned at the below listed number.

Respectfully Submitted,
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A handwritten signature in black ink, appearing to read "Linda J. Hodge", written over a horizontal line.

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